This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

+ *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.

+ *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.

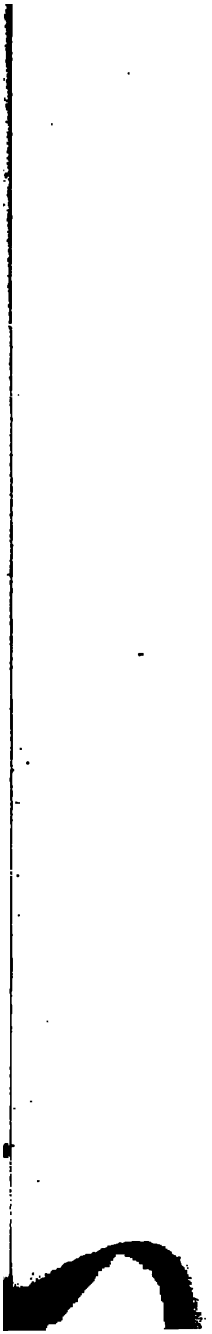
+ *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.

+ *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at `http://books.google.com/`

3 3433 07598815 8



P. M. KLING.

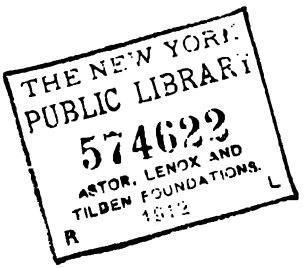
Why a Boy Should Learn a Trade

THE WORKMAN AS A CITIZEN ~~&~~ REWARD *for* SKILL *and* ENERGY

"A man with a trade makes
a better citizen, ~~soldier,~~
sailor or merchant"

BY PETER M. KLING
PITTSBURGH, PA.

Copyright 1906 by Peter M. Kling
All Rights Reserved



Press of
PERCY F. SMITH
956-958 Liberty Avenue
Pittsburgh, Pa.
1906

THIS BOOK

IS

AS I SAY IN MY FOREWORD

TO

"PUT THE RIGHT MAN
IN THE RIGHT PLACE"

P. M. KLING.

Why a Boy Should Learn a Trade

THE WORKMAN AS A CITIZEN ~ REWARD *for* SKILL *and* ENERGY

"A man with a trade makes a better citizen, ~~soldier~~ sailor or merchant"

BY PETER M. KLING
PITTSBURGH, PA.

Copyright 1906 by Peter M. Kling
All Rights Reserved

THE NEW YORK
PUBLIC LIBRARY
574622
ASTOR, LENOX AND
TILDEN FOUNDATIONS.
1912
R L

Press of
PERCY F. SMITH
956-958 Liberty Avenue
Pittsburgh, Pa.
1906

THIS BOOK

IS

AS I SAY IN MY FOREWORD

TO

"PUT THE RIGHT MAN
IN THE RIGHT PLACE"

Contents

Page

CHAP. 1—Why a Boy Should Learn a Trade.. 13
CHAP. 2—Economy By Skill..... 31
CHAP. 3—How to Learn a Trade..... 41
CHAP. 4—What Trade to Learn..... 49
CHAP. 5—Where to Learn a Trade..... 57
CHAP. 6—A Word to the Apprentice..... 69
CHAP. 7—What He Can Do..... 79
CHAP. 8—Labor Not So Hard as it Used to Be. 87
CHAP. 9—When a Man is a Good Mechanic... 97
CHAP. 10—Work and Play.....107
CHAP. 11—Importance of Education.....119
CHAP. 12—The Foreman and Superintendent..127
CHAP. 13—How Character Counts.....135
CHAP. 14—Future Possibilities.....143
CHAP. 15—Social Duties.....153
CHAP. 16—The Workman as a Citizen.....161
CHAP. 17—Reward For Skill and Energy.....169
CHAP. 18—The Summing Up.....177

STOP! LOOK! LISTEN!

IT is important to be a Mechanic in this great mechanical age.

It is advantageous to be a first class Mechanic; for he receives the highest wages.

Do not neglect to learn while you are young.

Do not miss an opportunity. Ambition in youth means comfort in age.

Five years spent in learning a trade is like sowing a crop; it may give you forty years of harvest.

Foreword

THIS book is not written to serve as advice for college graduates or professional men, but for the purpose of giving the benefit of experience to the young man who is less fortunate. It is intended more as a guide book for those who have had neither time nor means to get a college training. I know that there are many chances along the line in which I am advising the young man to educate himself, by which he can not only make a comfortable living, but perhaps advance himself to a position of importance. Our country has many superior men who never had the opportunity to get what is known as the higher education.

While college training is becoming more important every day, a mechanical education

is just as character-forming, and the field is certainly much wider. I believe that the professions are more overcrowded than the trades with skilled employees.

These words are written especially to assist the beginner. I believe I can advise him how, why and where to start, because early knowledge means a lot. We have too many young men who have neglected opportunities in their younger days. And I have heard hundreds of men say, "If I had only known then what I know now."

It is my endeavor to outline for the young man to "Know now" how to begin, how to proceed and how to strive for success. I feel that this purpose of urging a boy to learn a trade and get a mechanical training has been very much neglected, possibly because we are in reality comparatively a young country in the line of manufacture.

So far as time goes we are only beginners in the industries, and as the entire world is rapidly being educated to the necessities of

FARMERS BANK BUILDING, PITTSBURGH, PA.

mechanical improvements, and taking into consideration the great strides forward made in the past few years, there is a splendid future. I believe that with the people properly educated, with manufacturing and commerce developing so rapidly, the skilled mechanic is coming into his own.

The increase in manufacturing will not only broaden our own markets in this line but it will raise the home demand for the farmer's products. It has come to be an axiom that the more we manufacture the more we consume. The more raw material we turn into money, the wealthier our citizens and our country will become; the higher we can raise our wages and the greater quantity of manufactured articles we can produce, the better we all can live and the more comfort we can enjoy.

I have also taken the liberty to say some few words to our workmen as to their domestic and social affairs, outside of the pointers I have tried to impress on them with regard to

their shop work. I believe these things are of great importance, not only to the men themselves and their families, but to the country. My aim has been to guide workmen and mechanics so that they might help themselves to be healthier, wealthier and happier citizens.

During a long life-time in the workshop I have had the very best of opportunities to observe their ways, not only in the factory, but at their homes. I know where they work, how they work and where and how they live. I have worked with them and been among them for over thirty-five years.

I hope that my work will serve a good purpose, in not only getting boys to learn a trade, but in calling the attention of our manufacturers and liberal donors to the importance and necessity of establishing facilities to give willing boys an opportunity to learn a trade.

I have been brief, as I do not believe in using two pieces of material where one will answer. This book is written to put the right man in the right place.

CHAPTER I.

Why a Boy Should Learn a Trade

CHAPTER I.

WHY A BOY SHOULD LEARN A TRADE.

WHEN Andrew Carnegie set aside his millions for the foundation of the technical schools which bear his name, the Captains of Industry all over the world applauded the motive which led to the institution of this grand project. Coming, as it did, from one who rose from almost nothing to one of colossal stature in the industrial sphere, it was fitting that the whole world should appreciate the deficiency in the curriculum used by most educational institutions, which might offer just the sort of advantages essential to the rounding out of the gray matter in the brains of mechanics, upon whose ability depends a continuance of the commercial supremacy of our country.

By a bold stroke of the pen, Mr. Carnegie

not only set himself on record as a friend of the working-men, but, by giving his millions into the hands of wise trustees, skilled in the arts of manufacturing, started a campaign which will ultimately lead to the creation of a new force that has been lacking in the mills and factories of the earth, and by this same stroke of generosity thousands of objectors have received the answer to the query, "Why a Boy Should Learn a Trade?"

Here was a man who for years devoted his entire time and energy to building the most perfectly organized industrial establishments in the world, and we have the "Ironmaster's" own statement, that his success is due entirely to the co-operation of his thirty junior partners, and their wisdom in searching out the best talent in the youth of the land. This organization always has been essentially "a young man's interest"; and while there have been some gray hairs and streaked beards within the corporation, it can generally be asserted that loyalty in service has done more

to retain such positions than for actual results developed from superannuated help.

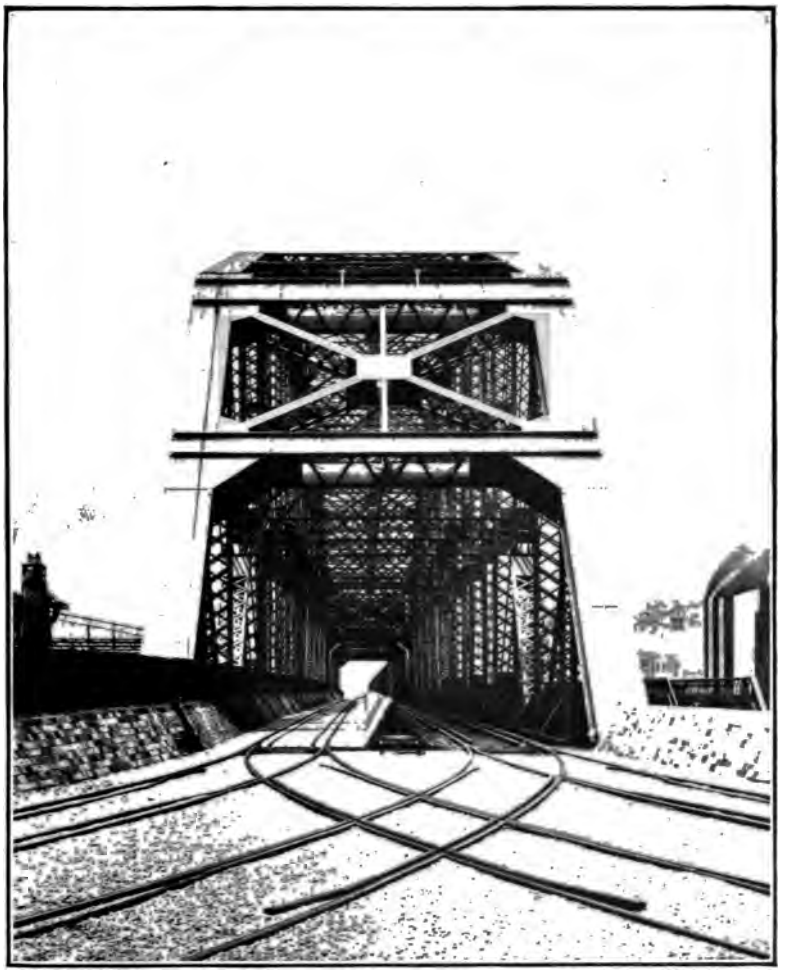
One of the greatest obstacles that ever confronted Mr. Carnegie was the lack of sufficient "corporals," "sergeants," and "non-coms," to carry forth the ideas of that celebrated phalanx of young partners who brought the steel business to the highest point of development. If you were to ask any Captain of Industry to-day wherein his organization was deficient, the invariable answer would be "lack of skilled workmen, to act as superintendents, foremen, and assistants to the men who pilot the mechanics in the mills."

But while they have all realized this, it remained for the brainy Scot to offer advantages to the workmen of the world to secure for themselves just that information which would enable them to enormously increase their income; to greatly aid the efficiency of the mechanics in the mills and shops; to enable the corporate interests to pay increased dividends through economy of manufacture,

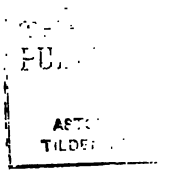
and to lift themselves beyond the usual sphere of the plebeian workman to a higher plane, and set a new standard of environment for themselves and families.

Time was when a father would be ostracized, if he handicapped his son by sending him out into the world without the equipment of knowledge, coming from a close application to an apprenticeship at one or more of the various trades. The "old stagers" can all look back upon the time when they left the little school house to enter the "kindergarten" of an industrial establishment. That was before the days of gigantic corporations, when the trades were few, the business small, and the applications for opportunities to study the mysterious rudiments of the early specialties were many.

It was a period which laid the foundation for the commercial success of this great country, and there is no doubt that the successful business man of to-day, from the banker down, owes a great deal to the prevalent custom of



AMERICAN BRIDGE COMPANY


ASTO
TILDE

bygone times, which necessitated the youth being apprenticed to some trade. There are many reasons why this should have been so, and the arguments are not a whit less effective to-day.

The increased demand for manufactured goods became evident years and years ago, not only in one direction, but to every corner of the country, even before the full development of our Eastern cities. It started with the landing of the Pilgrims at Plymouth, and as the march of progress conquered the wilds of the country that demand increased, until, at this very time, the whole country is crying out for commodities which must be manufactured.

In the olden days, it might have been a plow, or it might have been a sword; it might have been a nail, or it might have been a sack to hold the flour for the bread; but just the same, the demand was in evidence, and with the obliteration of forests and mountains, streams and distance, that same demand has

swelled to proportions which almost defy the ingenuity of man. In the infancy of the manufacturing business the scope of the capitalist in this line was more or less restricted. To-day there is absolutely no limit to the variety of goods classed as "manufactured" articles, and although the products of the farm always have been, and always will be, important to the commerce and wealth of a country, this vast interest has long since been passed by that known as "manufacturing."

It applies not only to machinery and transportation, agriculture, mining and other visible projects, but it is also extremely noticeable in the household. We have to-day improved gas ranges, modern plumbing, and thousands of improvements that were entirely unknown thirty years ago. Many small articles are within the pantry of the dwelling, and all add to the benefit and comfort of humanity, increasing the grand total of manufactures.

While we have developed an almost un-

heard of volume of business within our own country, the merchants and manufacturers have succeeded in corralling the majority of the foreign markets. The gigantic increase in the size of cargo, of the vessels plying the oceans with their thousands of tons of freight, is a testament to the industry of this country. When the invoices show the freight to be "manufactured goods," it is another potent argument "Why a boy should learn a trade."

We cannot manufacture successfully without skilled labor. Neither can our competitors. And the extraordinary scope of the manufacturing industry in this country has robbed the schools of the bright youths to continue the work which was started years ago. True, the old system of apprenticeship is not in evidence as formerly, nor are methods of instruction in the shop as crude as when our fathers obligated us to serve out the apprenticeship that had so many trials, defeats and victories in store for us.

When we started out to master our trade,

our first conception was that we were wage-earners. We were too young to realize that such a course of instruction was to be a lasting benefit to the individual. Nor had we the slightest thought that close application, which brought personal success, would contribute to the perfection of the industries of the country. The benefit one receives individually by being a tradesman, rather than an unskilled workman, cannot be measured in dollars and cents.

Of course, a man who is backed with the asset of a trade will earn double the amount of money received by one not so equipped, and in many instances the mastery of a trade will bring three, four or five times the amount of recompense paid the unskilled laborer. If you will just stop for a minute and think what this means during the entire lifetime of a person, with or without a trade, it will be of considerable importance to each individual who counts in making up the population of the world. To double the income during an entire lifetime means a great deal more comfort; it

means a great deal more pleasure; it inspires a better method of living, to enjoy the comforts of life, to have better clothing, to have better associates, to have a better home for onesself and family, and to be a great deal better citizen; simply and absolutely because of a few years spent during the spring of life in learning a trade.

You cannot impress this too strongly on your mind. Take it to heart, give it careful consideration, and you can readily conclude that it is the tradesman who has builded this country so high as to make it the envy of the world. And you who have children should carefully ponder over their welfare, before advising the steps which will point out the future not only of the individual, but of the whole country. Make up your mind that your boy will master some trade. Pause carefully before selecting in what direction his talents are pointed; but, by all means, let him learn a trade while he is young and has the opportunity.

When you see a man, and you can say he has mastered a trade, that man has an asset which will bring him untold advantages over the unskilled laborer. He has the brain development which will enable him to secure employment easily, and if he is a really skilled mechanic, a good all-around tradesman, no matter how dull the times, people will be looking for him.

The man with the trade "skids" quietly along, and while he may find it a little difficult at times to have all the comforts enjoyed in an average season, his very training of mind and hand is such as to enable him to adapt himself to circumstances, until the return of a prosperous season. He will have studied, saved and built up a name for himself that will enable him, through his usefulness in the community, to secure credit that could not possibly come to a common laborer.

You who have lived in a large city, or adjacent to one, can easily distinguish the man who is a mechanic. Pass down any of the

thoroughfares, which comprise the business marts of the city, and make a study of the men whom you see there. Glance at the passengers who make use of public conveyances, look at the shoppers, and invariably you will be able to distinguish a mechanic from a laborer.

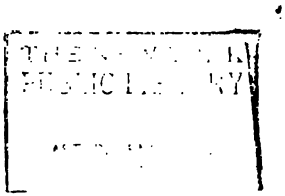
There is something in his countenance which tells you at once, "Here is a machinist, or a carpenter," as the case may be. The very lines which form the contour of the face depict exactly what is back of the external flesh. You can see a certain resoluteness and precision of action, that is wanting in a man who has not received the careful schooling which comes while serving an apprenticeship. If you see a gang of idlers on a street corner, or obliterating the light from a saloon, you will find very few persons who have actually mastered their trade, spending their time with associates who are so far beneath them mentally as to be able to earn less than half the income which accrues to a mechanic.

There is a rounding out in a man's char-

acter after he has mastered machinery and become practical, which is always in evidence. His clothes are cleaner, his habits are perfect, his language is neither harsh nor rude; in fact, all the attributes of a gentleman are assimilated by the mechanic, as he passes through the various stages of the apprenticeship with his craft. It may be that he is a carpenter, or affiliated with one of the many sub-divisions of the vocation; or he may be a machinist, or connected with some branch of that trade.

It might be that he is a blacksmith; or his hands and mind might be better adapted to the delicate work required in a watch factory. He might support his family as a plumber. You might find him tacking tin down on a roof, building stairways or carving various kinds of wood. No matter what trade he selects, you cannot fail to notice that his whole life is far and above that of his companion, who never received the technical education so essential to the mastery of a trade. His very home life is on a different plane entirely from

BRIDGE OVER NIAGARA FALLS.



THE NEW YORK
PUBLIC LIBRARY

the man whose sensibilities have not been broadened and elevated to the state of perfection as becomes one who associates with those mentally stronger than himself.

Just so long as the mechanic pursues his studies, thinking all the while to keep his mind keyed up to the latest developments, not only of his own trade but those closely akin to his selected business, that soon he will rise even higher than the plane of the ordinary mechanic. As sure as there are various social distinctions in foreign countries, so you will find it with the mechanics, not only in this country but all over the world.

They are a clannish lot of citizens, and with a natural pride in the possession of worldly goods, their ambition receives an impetus which carries them along from the rank and file. They rise to assistant foremanship, foremanship, superintendency, general managership, and even to the coveted position of chief executive; looked up to by a courageous board of directors as the President, the sole

inspiring head of a company, or corporation, whose capital investment may reach from thousands to millions. This is what is in store for the youth who will train body and mind to work, with all the aids which develop the rudiments of an ordinary trade. Studying hard the while, he becomes a specialist, whose reputation may be either local or world wide; or who may assemble the various parts of the sub-divisions of a trade, until he becomes a master mind sought after by the capitalist from one end of the world to the other.

Thomas A. Edison learned a trade and worked until he became the most proficient telegraph operator that ever tramped into an office to "hold down" a wire. He didn't stop at being a good telegrapher, but plugged along at his studies, until at this time the whole world owes him a debt of gratitude, that not only has brought him great honor but vast riches. You can never tell what the study of a trade will lead to. Certainly, it creates a de-

sire for more knowledge, and the harder the battle the easier the next conquest.

It is a singular thing that in addition to the advance made by Mr. Edison, Andrew Carnegie should have started out by mastering the mystery of the Morse code. It led to broader and more productive fields, until when he, at last, decided to die a poor man, he found himself the premier steel master of the world. These are two totally different endings to the same original trade, and there can be no doubt but that both of these men would never have reached their present stage of development, had it not been that they thought it necessary to learn a trade. When the advice is given that every young man should learn a trade, it is with the knowledge that it is almost as essential, as a foundation for a man's start, as a corner-stone to a structure. It is important that the boy become a producer and a valuable producer at an early age.

Chapter II.

Economy by Skill

CHAPTER II.

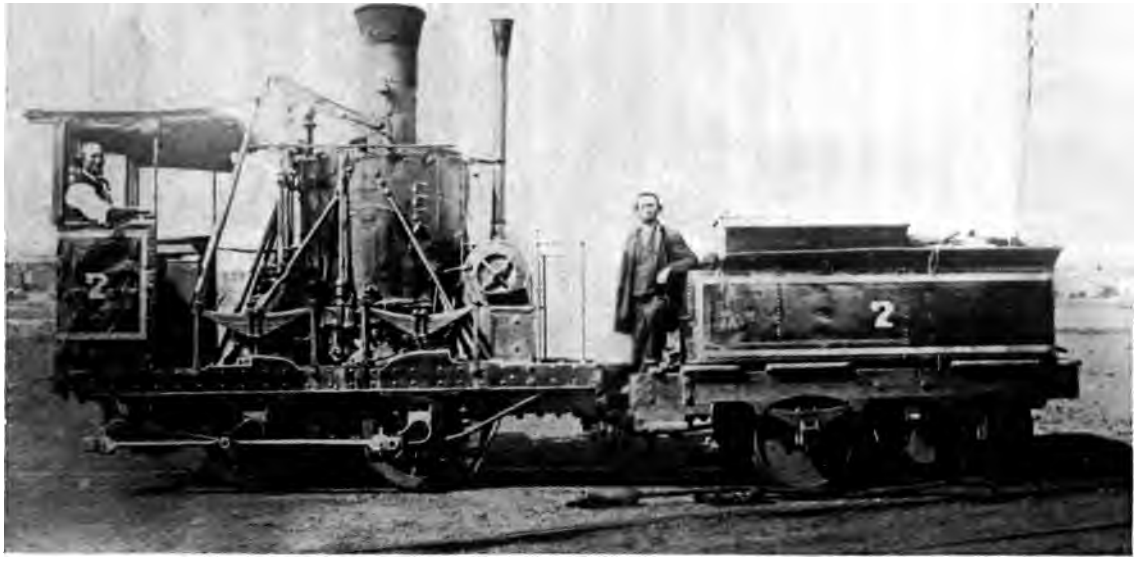
ECONOMY BY SKILL.

THE word "Economy" is the essence of any discussion which might originate upon the topic for or against a boy learning a trade. It has been the battle for supremacy between commercial men of the world, which has developed and brought to an apex the business of the artisan from one of feeble effort, in times gone by, to one of grand results at this time. Economy in manufacture is becoming more of a necessity every day. It is not only local and domestic competition that forces the practice of economy, but, when the merchant prince reaches out to conquer foreign marts, he does so with the idea, not only of extending his business, but of rounding out his organization, so that it is possible to get the

greatest amount of work of the finished type from his investment in material and brains.

When assaults are made on foreign markets, it is because the manufacturer realizes that, in order to meet competition in our own country, it becomes necessary to manufacture upon a more gigantic scale the merchandise in which he is interested. For this reason, the foreign markets are sought to care for the supplies which are in excess of the demands in this country. Even though, in many cases, the export business is handled at a bare cost, it is essential in order to meet the competition within our own country; and, when contending interests strive to accomplish a purpose simultaneously, just so soon is the public a gainer. So it is with the mechanic.

When contending interests look for the profits from the brain of the skilled workman, the old law of supply and demand regulates, not only the recompense of the mechanic, but marks the full development of his ingenuity



GRASSHOPPER. BUILT 1835.

in a new line. To the young man, who is resourceful and rises above the ordinary humdrum of a shop, come the honors of conquest, great riches and the profit-sharing participation through the generosity of the American manufacturer.

This will always be a factor in determining the demand for experienced mechanics. That one word "Economy" is the keynote to the whole situation.

We Americans are coming more and more in direct competition with foreign manufacturers every day, and those Captains of Industry and their trusted servants, who plan and scheme the ways and means of making money, and increasing the efficiency of their respective organizations, have long since realized that the lesson of economy has been brought home to the capitalists of the old world. This is especially true in the way our cousins across the water handle material.

Abroad, labor always has been cheaper than in America. That is one factor which

the mechanic of to-day must offset through ingenuity and sound business practice, which must always extend beyond the accounting room to the smallest corner of the shop. It took such men as Westinghouse, Pullman, Singer, Cramp, Disston and thousands of other manufacturers to develop the necessity for economy. It is a part of their organization to instruct not only the apprentice in the shop, but the mechanic, in the value of scheming to pare off material here and there and to save a minute wherever possible.

How careful they are of minutes may be gathered from an actual experience in the life of a time-keeper, who was employed some few years ago at the Pencoyd Iron Works, along the banks of the Schuylkill River, just outside of the city limits of Philadelphia. It was the custom for the men to cease work at noon and take a half hour for dinner. When this recreation period had passed it was the duty of the time-keeper to blow the shop whistle, which sent the men back to their labors for the other

half of the day. But while engaged in clerical duties one day, this particular time-keeper allowed the clock to travel along until the hands pointed at 12:32. He jumped to the lever, pulled the whistle and the men went back to work. Within five minutes the chief auditor of the company, Mr. C. C. Price, came bouncing into the time-office and calling the negligent time-keeper by name said: "Freddie, 4,300 men at 2 minutes each makes a big loss to this company. We will not take it off your salary to-day, but don't you ever be late blowing that whistle again."

You can readily see for yourself that the two minutes delay in sending the men back to work cost this corporation a considerable amount of money. The vigilance of corporation officials who are successful is such, that they immediately take notice of a loss, no matter how small. While apparently a couple of minutes delay was an insignificant thing, when extended to cover the case of thousands of men, it would show a tendency to cut into

the economy of an institution, and allow their competitors just another little fraction of an advantage over them.

When great men who have become successful pay so much attention to small details, in order that they may attain the highest point of economy, it is a potent argument why a boy should learn a trade, in order that he, as soon as possible, may reach such a condition that he can become a strong factor, not only in the support of himself, his family and community, but his country. Long ago this was recognized as a truism, and the successful men of to-day find it advantageous to set the youth at work in the shop; to begin the educational grind of the apprentice immediately after the school days.

To be a real economist from a mechanical standpoint, it takes a man that can design and build a machine that will do in one operation what the old machine is now doing in two operations; and again, a man that can design and build an engine that will furnish the

same horse-power as the old engine with half the steam; or a man that can design and build a boiler that will furnish twice the steam the old boiler furnishes, using the same quantity of fuel. In other words, a mechanic that can design and build a better article than the old one, at the same time requiring less material and less labor to produce such article.

These accomplishments are real economy and require skilled mechanics. Such men are badly needed and can demand big pay.

If one carpenter can make a chair with less wood and less waste than another and still produce as good an article of furniture, he is proving there is economy by skill.

Chapter III.

How to Learn a Trade

"ROYAL LIMITED."

CHAPTER III.

HOW TO LEARN A TRADE.

IF you were to go into a large industrial establishment, and gaze at the apprentices receiving instruction from older and wiser heads, you could not fail to realize that they are between the ages of 15 and 20 years. This is the time in period of youth which can most easily be spared and during which the brain and body is best adapted to assimilate instructive ideas. At this age the boy is still under the care of parents or guardian with seldom anyone depending upon him for support. Unless he has a widowed mother, or some equally unfortunate handicap, there should be nothing to distract him from his studies. The mastery of a trade has many peculiarities, and unique conditions that are hard to express and difficult

to relate because of the diversity of circumstances, periods and combinations.

All present themselves differently to individuals, and it is absolutely impossible to lay out a fixed line for any one business, which will be sure to develop final results of exactly the same character with each individual.

Learning a trade is a good deal like conquering a language. There is no better simile that can be used. We have all heard people converse in a tongue of which they are not master. Some persons will grasp a language very easily and some boys and men will get the foundation of a trade rapidly. Others will work hard with a lesser degree of success. Every experienced shop superintendent has seen men fifty years of age, who have worked at one trade all the time they were wage-earners, and when they had reached or passed the half century mark, they were still poor mechanics. People have spent years and years trying to master a foreign language, and still were unable to express themselves intelli-

gently. There are different ways of learning a language, and there are different ways of picking up a trade.

We can learn a language so that we speak it fairly well, but when it comes to reading or writing in a strange tongue, we make a miserable failure of it. Some will be able to master the pronunciation and the grammar, and others will get both so confused that our sympathy goes out to them in their struggles. It is absolutely the same thing with a trade. A youth may master one so that he will get the pronunciation, grammar and spelling perfect in every detail. He may have no trouble whatever in disposing of the most intricate problems which come up. He may be able in the absence of a preceptor to reason out, in a short time, just why things should be done a certain way. If a problem which is entirely new to him and his employers should arise, his reasoning may be such as to effectively dispose of it in the shortest manner possible, correctly and to the satisfaction not only of

himself, but the organization. The difference between the two lies in the foundation.

It is always the foundation and natural ability a man starts with which determines easy success, a hard victory, or a losing battle. The necessity of a good school education before beginning an apprenticeship is very essential. No matter how staunch the superstructure may be, if piled on quicksand it will crumble away. With the proper educational foundation, it is far easier for the right man to secure the right place as a beginning. Millions and millions have been spent in this country and others for educational purposes. It has been one of the greatest problems of the age to arrange a system of instruction in the various schools and colleges of this country, which will fit a man for his combat with the world. A youth who has passed through the country school is not so well adapted to begin life as one who has received the further instruction of a higher manual training institution. Nor are the students who are graduated from the

last mentioned as well prepared with a foundation to begin the study of a trade, as those who have gone still further and gained the theory in a technical college. The more solidly the foundation is builded, the more weight it will carry. The more a man is taught to think for himself, the more valuable asset will he become when he has finished the apprenticeship of the shop. He will be a workman worth his salt.

Chapter IV.

What Trade to Learn

CLASS E 27. HEAVY CONSOLIDATION. 208,000 POUNDS.

CHAPTER IV.

WHAT TRADE TO LEARN.

OF course, natural talent is a sign board that cannot be ignored and should be watched closely. Some boys can paint animals, imitate pictures, or reproduce caricatures practically without any teaching whatever, while their next door neighbor might find it absolutely impossible to duplicate these feats, no matter how hard the effort. This is natural talent. You will find another boy experimenting with his mother's sewing machine or clock. He can take it apart and put it together with comparative ease, without instructions from any one. This is natural talent in another direction. Further up the street you will find a third boy who can whittle out a ship, rig it with sail, and when he reaches a convenient

pond navigate it. His chum finds it easy to put in, or take out, an electric bell and his father always has him care for the batteries and attend to the small details after purchasing the supplies. This boy is gifted in another direction. So we find mentally and physically we are of different inclinations when dabbling with mechanics.

You have heard of the boy whose father left him the task of whitewashing a large board fence. When the parent returned in the evening he found the partition immaculate and the boy without a sign of labor. Explanations disclosed that the son had not only escaped doing any work himself, but had exchanged permission for his chums to wield the whitewash brush for a due and sufficient consideration, which, when totalled made three bags of marbles, a dozen toys, and a half peck of fruit. This is talent in another direction and it would be a shame to divert that talent outside of strictly mercantile lines.

You have heard people assert the glories

and advantages of health and station accruing from life on the farm, but talent is in evidence in the country districts as well as in the city. The farmer's boy who would rather carry a hatchet or use a saw, willing, able and anxious to do mechanical work should by all means be given the opportunity to become a tradesman. Leave the farm work to someone else, who would rather break up the soil and be a companion for the stock.

Attention should always be paid to ability as reflected in work or play. Nearly every boy will ascertain that he has a fondness for a certain kind of work, or a particular trade, much more than for others. He has a wish and his desire should be gratified by allowing him to choose a vocation in line with it.

There are many trades and this is liable to bewilder a young man. If, for instance, you were looking to the metal trade, it might puzzle you to choose some division from a watchmaker to a locomotive blacksmith. But at the same time, if the young man desires to

become a metal worker, he should make up his mind with reasonable positiveness in what direction his preference lies. He should know absolutely whether he wants to be a machinist in the locomotive works, electrical works, or whether he is better adapted to develop himself as a general machine tool maker. If he desires to work with woods, he should make up his mind with some reasonable certainty what specific department of this trade he prefers to follow in order to become a journeyman.

Choose your trade in the way you think. The machinist operating a large lathe, who handles his metal with a crane, may not work half as hard as the machinist who is handling the small lathe, and rapidly turning out many articles. If heavy machinery is pleasing to the youth, and he is fond of it, let him choose his trade in that direction. On the other hand, if he prefers small instruments and would rather handle delicate machinery, let him educate his mind in that direction, and he will make no

mistake. The field is broad between the manufacture of pocket knives, and the gigantic shears that cut iron and steel of any dimension; between the watch spring, and the locomotive. The one thing for the beginner is to start right. Begin where you are best adapted, and always start work in something over which you can become enthusiastic. With this it is positive that you will have some ability to work in the right direction.

If you can whittle a dog's head out of a block of wood with a pocket knife, and you would rather sit down and do that work than anything else, by all means hurry up and be a wood worker. If you would rather carve out fanciful figures and find it is less strain on you mentally and physically than sawing off heavy joist ends, pay no attention to the heavy wood.

You will, of course, realize that it is necessary to make a sacrifice in order to accomplish anything. You may think there are many difficulties and, of course, will have to learn something you do not like, never cared for,

and be inclined to think they increase your hardship. Education is a minor hardship so insignificant in comparison with the struggles of those without this foundation that it should not be considered. While the thing may appear hard, and you may feel imposed upon, there will come a period when the fascination of work will make things not only easy but a pleasure. That is the time a man begins to "arrive."

Chapter V.

Where to Learn a Trade

PE NNSY LVAN IA
268 070
CAPACITY
PSCWL 30 200 105

CHAPTER V.

WHERE TO LEARN A TRADE.

WHERE to learn a trade is probably the most important question that will enter into the life of a boy. If he is in the city or living in the country the matter will be equally problematical. If in the city, there will be many places to choose from; if in the country, he may have to travel far. But the one thing of most importance is, that he should not look to the big establishments, but the smaller and less important places, where he may learn the details of his work. In the smaller shops it is usual for the boss or owner to be in close touch with every one of his workmen. He is the superintendent, manager, foreman and indeed, the ideal workman. To him the apprentices can look for guidance. He knows the

business in every detail. He has probably begun as an apprentice boy himself, and has learned all the hard drudgery that lies between the beginner and the expert. He can let the apprentice know all the little tricks of the trade that the specialist never seems to comprehend. He will take pleasure, as a rule, in seeing that the boy is gradually taught the little things which go to make up the completed workman. It is all to his interest, because the sooner the boy has learned some of those tricks of the trade, the more useful he will be to his employer.

In a small shop, in whatever business, there is more work done on repairs than anything else. Take, for instance, an automobile. It may be of the most modern construction and may only have been out of the salesroom but a month when something has gone wrong with the mechanism. The owner does not know what the matter is and so it goes to the repair shop where the boy is employed. Of course, it is not given into his hands; but

some expert workman is detailed to take the machine apart and find, not only where the difficulty lies, but what can be done to remedy the defects. The boy, as helper, can see what the expert workman does. From this he will learn how the machine has been built, and how it can be repaired. Besides, in the smaller places there are fewer workmen and it is essential that they be all-around men, who can make, unmake and repair when necessary. Under the tutelage of such men the boy not only learns what the specialist starts with, but all the rudimentary things the specialist sometimes has overlooked.

There may not be a large volume of work in those smaller places, but the boy will get a much greater variety. If he goes into a large factory or a large establishment of any sort, he will learn only the particular branch of one trade which the man, to whom he is intrusted, has specialized. There, also, he will have to "run" for so many that he may have no particular friend, but in the small factory or

establishment he will have to be in close touch with a tradesman who knows his business from A to Z, and who will be only too willing, as a rule, to let him know anything he asks.

The boy should never be afraid of any task that is imposed upon him by the man who knows his business. It may seem distasteful. There was a sailor boy once who had just joined his ship. He was carried away by the romance of the sea. He thought it was all plain sailing, wearing brass bound uniforms and giving orders. But he was an apprentice seaman, and when he got over the first three days of bad weather and seasickness, he was ordered by the mate to get a tar bucket for one of the sailors, who was working on the mast. The boy, having been brought up well, used to napkins at the dinner table, and other luxuries of home life, picked up the tar bucket by its rope handle between his finger and thumb. In this fashion he carried it to the mate. The ship's officer, in rather

harsh language, ordered him to put the bucket on the deck, and then, seizing the boy by both wrists, plunged his hands into the tar. "Never be afraid of tar again," said the mate, and so the boy learned the first lesson in being a seaman.

In whatever business the youth may embark it is always necessary to remember that the hardest jobs are the first jobs. The young man who can, with an apparently smiling face, do all the drudgery, the rough work, and the "tar bucket" business around an office, or factory, or establishment, is probably the one who, everything else considered, will finish at the top, or very closely to it.

One of the disadvantages of a big factory or establishment is that the specialist has forgotten everything but his own particular line. If there is an unusual job to be done, he cannot undertake it because he can only do it, he thinks, with special machinery which the factory or establishment may not have. The man who comes up from the small place has

been used to thinking. There are always more ways than one of killing a cat. The man who can think can usually find a way out of any difficulty.

The very latest thing is wireless telegraphy. For this new system it has been found that monster poles must be erected. The highest in the world are said to be those on Mt. Tamalpais, not far from San Francisco. They are three hundred feet high and expected to carry messages as far as Honolulu. When they were built they were constructed section by section horizontally on the ground. Then the engineers, after much figuring and wasting of time, managed to get them to their three hundred feet of perpendicularity. It was a hard job and hailed with much acclaim throughout the engineering world. Similar poles only a few score feet less in height were erected on the Government Naval Reservation at San Juan, Porto Rico, by sending section after section up one under the other in less than a week. The work in California was

done by eminent engineers; that in Porto Rico by a boatswain's mate who had learned his business as a common sailor. He had the rudiments that always tend to quicker, better, and more expert work when followed by study.

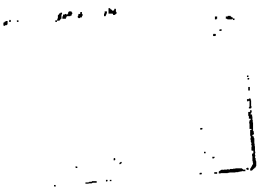
While the boy is learning he should not forget that, although he is drawing very small wages, he may be costing his employers a considerable amount of money for the knowledge they are imparting to him. He is liable to spoil a piece of work, to break tools, make mistakes, injure machines, and do many other things that will figure in the expense bill. Besides these, he is taking the time of an expert workman, occasionally, who may be imparting knowledge to him. He may feel that he is being imposed on, made a drudge, and being otherwise mistreated. But he should always remember that he is being taught.

It is because of the attitude of so many lads that some factories have said, "We don't

want to be bothered with boys." However, some of the greatest mechanical establishments in this country have overlooked the attitude of the boys, and are now taking young men as apprentices. They are practically giving away trades to the youths who are capable enough to pass the preliminary inspections that are required. Some of these young men appreciate the benefit which has practically been handed to them. All of them should. There is no greater gift that a boy can receive, than that of having some trade or means of livelihood at his finger tips. With the mechanical ability in his fingers, if he will use his brain, he can increase his income, his usefulness to himself, his employer and to the world at large manyfold.

All of the German princes and princesses, sons of Kaiser William II, and the children of the various rulers of the smaller German principalities have to learn a trade. Some of them are cobblers, woodcarvers, painters, etc. The princesses can use the needle and are experts

LARGEST LOCOMOTIVE IN THE WORLD. WEIGHT 334,000 POUNDS.



in housework. If royalty, which is supposed to be hedged about with all the luxuries that the human mind can crave for, can see fit to have its children so educated as tradesmen, while really sitting in what is known as "the royal purple," why should not the average boy, who has nothing to look forward to unless he has what is called "rainbow luck," learn a trade?

He should learn it rightly; learn never to be a copyist, but original. The man who has to copy never gets higher than second place. The boy ought to aspire to be master of the situation.

Chapter VI.

A Word to the Apprentice

CHAPTER VI.

A WORD TO THE APPRENTICE.

ONCE a boy has made up his mind which trade he wishes to learn, one of the most valuable assets he will have will be tenacity of purpose. This does not mean "bull-headedness," but that, in addition to keeping his eye on everything he can pick up, he be attentive, polite and obliging. This will aid him very much in getting information and instruction from his associate workmen, as well as from the foreman under whose charge he may be. Many who have started as apprentices have given up their work in disgust because they could not succeed in performing certain tasks after one or even more trials. They would quit, and as a result they were sorry

through life for not having more ambition to stick to that particular trade, and to finish their apprenticeship.

One of the peculiarities in this country at present is that men jump from one thing to another because they find there is more money for the time being in what they are most lately attracted to. A good mechanic should not try to be a soap salesman, because he finds that he can make more dollars for the time being in his new business. If he would stick to his own trade, think and become an expert, so far as he can, he would without doubt in a few years be making far more money as an expert mechanic than he would be trying to learn the business of soap selling. Of course, this is leaving out of the question the fact that he may have been more suited in the beginning to be a soap seller than a mechanic, which again emphasizes that the boy, in choosing the business which is to be his life's work, should carefully consider what work he wants to undertake,

and make up his mind to put up with the preliminary hardships.

For the workboy, one of the first and most important steps is to learn to handle his tools, or if he is put to a machine to comprehend every detail of it. He must learn how to care for his tools, because care and handling are very different things. For instance, a cowboy might be a dead shot with a revolver, a knack acquired by using other people's pistols, but he would be a very poor cowboy if he did not know how to clean and care for his pistol. A man may be able to handle tools if someone else cares for them, but the man who can not only handle but care for his tools is the workman. One of the most universally used machines is the typewriter. There are multitudes of men and women who can strike the keyboard correctly, but of all the multitudes there are some who forget to put on the cover and to use the oil can, and they are not workmen.

Every branch of trade has its own detail,

and while the typewriter may stand as an instance in one, it is impossible to particularize. The boy himself must study and make it his business to follow his work from the "raw material to the finished article." While he is thus engaged he will quickly learn what he most needs. Suppose the work is of such a nature that specifications and detailed drawings are used. He will readily discover the necessity of taking drawing lessons, coaching up on mathematics, and such other schooling as the business may require. But the most important thing for the boy to learn is to obey. It has been said that no man can be a commander unless he has learned to obey, and no man can be a master unless he has served an apprenticeship.

While the boy is learning his trade he should try to keep as his example the best mechanic in the shop. Watch him in everything he does, especially while he is at work. It is wiser to copy a successful man than an unsuccessful one. The boy will probably find

A PENNSYLVANIA MODERN ENGINE.

that the best mechanic is a very systematic man. He has his tools where they can most easily be reached, and he does his work with less exertion and more enjoyment to himself than anyone else in the place. He is the true artist; he is living whilst he is working. He is no drudge. Others in the shop will have their work scattered, and lose valuable time searching here and there to find what they require next. It is much easier to do things neatly than it is the other way. The best mechanic will always be on time, and that is one of the principal things the apprentice should remember.

While the boy is training his hand he should also be training his brain. There are mechanics who learned to be mechanics by habit. Somebody had shown them how to do a certain thing. They never learn to think why a piece of work can be done a certain way and why not another. The man who teaches himself to think and reason is the one who becomes valuable, and draws the largest

pay. It is the same man who gets the preference when work is scarce. No firm nor business man will discharge the best employees when work is at an ebb. They, individually, can do the work of two slovenly men.

Perhaps one of the most usual temptations that the mechanic is met by is that of using liquor. The boy who wants to become a successful workman should, during his apprenticeship, avoid men afflicted with the liquor habit. There is more misery resulting from over-indulgence in liquor than from almost any other excess. It undermines a man's constitution, it ruins his character, and a drunkard is a curse not only to himself but to his family. He has no credit, no friends, and his associates are of the least desirable kind. People have said, speaking of a friend, that "He is a good mechanic but for his drinking habits." A drunkard is no more a good mechanic than a criminal is a good citizen, and for any young man to get into the liquor habit is one of the greatest misfortunes.

The young man while learning his trade should not have his nose continually to the grindstone. These are the years when a young man is apt to think that he is one of the strongest machines in the universe. If he is working at an engine, he feels as if he were almost as strong as the mechanism he controls. He should not forget that the engine is fixed and formed, while his body is still growing; he should not forget that development, physically, has not ceased. It is the greatest good fortune in the world to be in possession of a physically well developed form. Therefore, the apprentice should not neglect his health and should get all the bodily exercise he can, especially if his trade is of such a character that he is indoors during his working hours.

When a young man has finished his apprenticeship, it will be of importance to him whether he should remain with the firm or seek fresh fields. He has only seen one method during his apprenticeship. There may be

other better and later things, and systems which are being utilized somewhere else. A few years spent in seeing how things are done in other places will not only broaden him as a workman but as a man. It is always best to know every trick of the trade, and the good workman not only learns his trade but learns it right. But every American boy should remember that he is fortunate to live in a country of plenty, and should learn how and what to do to get his share, and how to enjoy it when he finally "gets there."

Chapter VII.

What He Can Do

CHAPTER VII.

WHAT HE CAN DO.

EVERYBODY has heard of the handy man, that person without actual mechanical experience who seems to know by intuition just how to mend things. He is invariably the useful member of any household or community. Usually he would have made a skilled mechanic or a useful inventor had not his natural bent been thwarted in his youth.

During the late war with Spain the value of the handy man as well as of the real mechanic was shown with striking force in many instances. When the American Fifth Army Corps, under General Shafter, was fighting its way fiercely towards Santiago de Cuba, the fighting resulted one day in the sudden retreat from Siboney of the Spanish forces. Running

from Siboney along the coast to Santiago was a narrow gauge railroad used for hauling ore to ships in the bay. The Dons had been using this railroad as a means of carrying forward men and supplies. In their hasty retreat they took time to dismantle the engine by throwing away, into the tall grass, some of the most vital pieces of machinery. After the Americans had completely driven them towards the city, and had time to breathe and think, the soldiers found the crippled engine, saw at once what parts were missing, and after a long search in the jungle discovered where they had been hidden. Then the handy man and the mechanic, working together, soon had the machine in working order. This little old engine proved to be one of the most valuable allies of the American fighting men up until the time peace was declared and even later. It served on many occasions as a hospital train when the ambulances had broken down owing to the terrible trails over which they had to be driven.

INTERIOR MODERN DAY COACH. THE BARNEY & SMITH CAR CO.

THE NEW YORK
PUBLIC LIBRARY

ASTOR, LENOX AND
TILDEN FOUNDATIONS

In the Philippines, time and time again, soldiers took charge of the dinky little train that ran on the Manila-Dagupan Railroad. The train crews were all skilled mechanics who had elected for a time to fight for Uncle Sam. But when the necessity arose for their services as workmen, they did not hesitate to turn out as handy men on behalf of their country at the very small pay of a private soldier.

In many ways, for private, commercial or other needs, the knowledge of how to use the hand and mind is indispensable. The husband, or son, who can doctor up a clock, fix a window sash, mend a broken picture, put on a door knob, and accomplish successfully the thousand and one little things that are constantly being mended around a house, is not only a comfort to himself but to all around him. The household that contains such a man saves money in expenses.

It is not necessary that such a person should actually go through the formality of learning his trade in a factory, but he should

at least take a course of manual training. This would give him a certain amount of real mechanical knowledge, and educate him both in construction and material.

Around every house to-day there is some sort of machinery more or less intricate that often requires a little tinkering. It may be a bicycle or an automobile, a gas range or the plumbing, but whatever it happens to be the handy man or the mechanic can always be of use. Many well meaning parents seem to have the mistaken notion that for their children's welfare there cannot be too much school education. They overlook the inclinations and desires of their children who have a mechanical talent. Many a young man has come back from college, and gone right into a factory. It is embarrassing for a youth with such an education and training, and usually over twenty years of age, to go into a manufacturing establishment and start alongside the boy ten years his junior. These are some arguments

why the boy should learn a trade and learn it while he is young.

In Europe there are several countries in which so much importance is attached to teaching a boy a trade that parents, instead of receiving payment, however small, for the work of the apprentice, must furnish a premium, and often a stiff one, to the employer for according the youth this privilege of being taught. It is usually worth the money. The boys are willing and anxious to learn, and they have employers who are willing to teach them. That is what we want in this country—receptive apprentices, and bosses who will teach them.

Chapter VIII.

Labor Not So Hard As It Used To Be

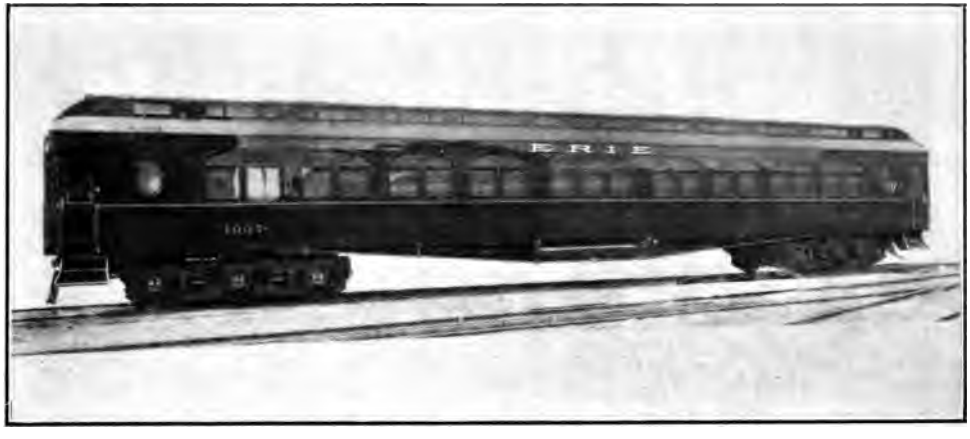
CHAPTER VIII.

LABOR NOT SO HARD AS IT USED TO BE.

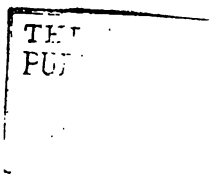
IF the boy who is thinking of becoming a mechanic will consider, for a moment, what improvements in the field have been accomplished in the last twenty-five or thirty years, he will be amazed. The mind hardly can be brought to see where to begin and where to end in this connection. People who do not think, or are not in touch with what is going on, have no idea of the great accomplishments for the comfort of humanity that are being invented and produced yearly. For the boy who has a leaning in this direction, the best method to get acquainted with what is new is to keep a sharp eye on mechanical and technical papers. Besides these, he should endeavor to have such books as Appleton's En-

cyclopedia, the Scientific American, Railway Journal and others that cover similar fields. The question, however, is so broad that it is almost impossible for the mechanical individual to comprehend fully what is being done. Hard labor on the farms and in the factory has been reduced. At home and when traveling there are all sorts of comforts due to mechanical genius that were unknown thirty years ago.

Machinery is being invented, not only to comfort humanity, but actually to reduce the burden of the beasts as well. Feats are being accomplished that were thought impossible a score of years ago. And as we learn more and more every day how to harness the elements, the pleasure and comfort of the world are being increased. This is said, not to give the impression that the mechanics are accomplishing wonders because they are smarter than anyone else. It is because they have the field that is the very broadest in existence and this field is growing every day. The demand for



MODERN PALACE ON WHEELS. THE BARNEY & SMITH CAR CO.


THE
PUB

improvements is still on the increase, and no one who looks around can fail to realize that the world is on the verge of a still more wonderful mechanical age.

Traveling by rail to-day is a luxury compared with what it was within the memory of men still in the prime of life. The sleeping car industry supports the entire city of Pullman in Illinois, besides the thousands of men who are employed in these palaces on wheels along the road. Compare the latest automobile with the old-fashioned stage-coach, and the result is laughable when the period of time between them is reckoned. Think of the row-boat with all its muscle-producing hard work and the auto-boat that flashes along like a streak of electric fluid. Even the bicycle is a luxury and a labor-saving device. To produce all these things it can be seen that some mechanical genius must have been busy with both hands and brain, to bring them to their present development. No sensible person can look around and dispute that inventions, such

as these, are not beneficial. For our times steam and electricity have done wonders, and the people to-day used to those wonders, can scarcely understand how our immediate forefathers managed to get along at all. From what we have done in our time, it is fair to assume that our descendants will look back at us with amazement, laugh at our old-fashioned way of doing things and wonder why we did not know better, or do differently. Just as we think that our grandfathers were old fogies, so fifty years from now, our grandchildren may be tittering at us.

Had it not been for the invention of the sewing machine and improved methods of manufacture in cloth, we could not enjoy the cheap and good clothing that can be so easily procured to-day. It would take a great many tailors to produce half the garments that are absolutely necessary at the present moment, if by some miracle all our machinery were destroyed.

Take the shoe situation; any man in the

prime of life can well remember when the cobler would have to charge seven dollars, eight dollars, or nine dollars for a pair of boots or shoes that are now selling for three or four dollars. The shoes were no better than they are to-day, nor was the material. Think of the newspaper presses that print, count, fold and stack ready for delivery, almost ten thousand copies an hour. The result is that to-day we can buy a paper for a penny, whereas, only a few years ago, there was less news for five cents.

Almost any invention creates a demand for work, and a desire for further luxuries. Still there are men occasionally who insist that machinery takes away work from the laboring classes, and in a certain sense it does. But whoever argues from this standpoint does not have the right point of view. It is a fact that no machine consumes any material necessary as food for man or beast. If the mechanism that does the work of ten men consumed the amount of nourishment required for these

men it would be an interference and a menace. Machinery never raises the price of food or of the necessities of life. It simply works in the most laborious fashion and always without complaining, which is more than can be said of some men. Machinery is relieving humanity of the heavier burdens and has done a great deal to shorten working hours and make labor easy.

There is scarcely a household in the country in which a piano is not one of the possessions. Thirty years ago a much ruder instrument was considered a most expensive luxury to be seen only occasionally. But the improved methods of manufacture have resulted in their being put on the market at such a low figure, and of such splendid quality, that they are now within the reach of the majority. In this one simple thing, machinery has done much for education. What would the home of to-day be without modern ranges, gas stoves, well equipped bath rooms, hot and cold water, convenient furnaces and all those other things

without which we now can scarcely get along. The modern man does not have to rise in the morning, split wood and kindle a fire before breakfast; he does not go out to the well to draw water. Through mechanical genius, these methods have been improved. One has but to look around to see that the mechanic almost has the world at his feet to-day.

As an illustration, just think how one small man, the engineer in charge of a large locomotive, can handle a thousand ton train, move it at fifty miles an hour, stop it at will within a comparatively short distance, start it without any perceptible effort and, indeed, control this modern thunderbolt more easily than the laborer handles his wheelbarrow.

CHAPTER IX.

When a Man is a Good Mechanic

HIGH-SPEED ELECTRIC CAR. DESIGNED AND BUILT BY THE AUTHOR.

Chapter X.

Work and Play

CHAPTER X.

WORK AND PLAY.

HAVING said so much to encourage young men to get interested in their work, it is necessary to let them understand that their entire life should not be spent in the shop. Everyone requires to pay some attention to recreation and pleasure, after the toil of the day is over. As the old adage has it "Much work and no play makes Jack a dull boy."

When the whistle blows and you pass out of the factory gates, or the workshop door, leave all your business behind. If a fair day's work has been accomplished, value received has been returned for wages, and the mind should be occupied with nothing concerning the shop until it is necessary once more to return to the daily round. Never carry the shop home.

"Talking shop" should never be indulged in unless it is absolutely necessary outside of working hours. All leisure time, except that spent in study, should be dedicated to rest and recreation.

Worrying about work is one of the worst habits that a young mechanic can indulge in. If a mistake has been made and the discovery comes too late to correct it, nothing is more idle than to waste time wondering what the boss will say the next morning. This habit is one that is liable to grow. When the young mechanic rises to an important and responsible position, it is apt to play havoc with his physique. The boss, who is responsible for many men under his care, and numerous details entrusted to those in his charge, will not last very long, either as a foreman or a good specimen of humanity, if he permits himself to worry.

The evening should be the working man's own time. When he goes to his home he should be ready to take up any subject of con-

versation that the day may bring, and not permit his shop troubles to rob himself, his family or his friends in joint conversation and joint pleasure. Should he be foolish enough to permit himself to brood, it is almost inevitable that he will rob himself of a good night's rest. This will leave him in poor shape to shoulder his responsibilities when he returns the following day. He should read his evening paper with attention, take an interest in the routine round of news, mingle with his fellows and, in general, behave like a civilized being. Some men go home in an ugly mood because they have had trouble at the works, and they want to tell everybody about it.

The young mechanic should never try to make his friends believe that he is of such importance that it would be impossible for his employers to get along without him. The world goes on, and business progresses, no matter how important he may think he is, for there is always another to take his place at any time. Worry is like a sneak thief, it will

work in on a man, interfere with his mental capacity and his constitution almost before he is aware that he is giving away to it. Many a man with responsibilities has worked himself into a nervous wreck because he did not know how to lay it aside or guard against it.

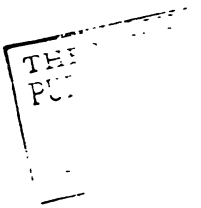
Men who have been discharged from employment sometimes give way to worry when they have the whole earth before them in which to look for another job. It is impossible to get physical rest until mental rest has been achieved, and both are most important. The man who is unemployed and idling his time away seems to be resting, but the best authorities have guaranteed that he is never contented. Where there is no real work there can be no play. When it all looks like play, there is nothing real about it. But one of the absolute necessities for him who does spend his days in hard work, mental or physical, is that he should have some time, at frequent intervals, in which to forget that which he has been doing.

The young man in the shop, even should he be studying hard after hours, should take his evenings out at least twice a week, and should plan so that he can afford a day or even an entire week off, occasionally. The workman who can do this is looked up both by his fellows and his employers. The person who can never afford to take a vacation is either a miser or a spendthrift and neither can be a good workman. He owes it to himself and to his family to enjoy an occasional day's outing. An evening spent in the theatre, or a day in the picnic ground, fishing or outdoor sports, are always good practice, and should be on the program of every one steadily employed. These are merely suggestions. Each one must judge by his own desire just what kind of relaxation is most benefiting. Men who have easy work, such as watching a big machine, tending an engine, taking charge of a lathe or planer, when they want to lay off could do nothing better than take a gun and walk twenty miles. For the young mechanic,

no matter how hard his work may be, a good walk is one of the best of recreations, because it will rest the mind and give him a chance to think over the things other than those at which he has been employed in the workshop.

While evenings should be laid aside for fun, there should be others devoted to education. A night or two a week devoted to schooling will help anyone in a most wonderful fashion. After the young man has become sufficiently acquainted with his business to understand what will aid him to become more proficient, he should take up a line of study at a night school. Should he be in the city this is easily accomplished. If in a smaller place, there are correspondence schools, or he may arrange for private lessons. He may discover that mathematics will help him considerably, or it may be drawing; but whatever the line may be, from chemistry to the Chinese language, he should discover what it is, and then go after it. If he is ever to be a skilled mechanic or rise to a responsible position, he

METROPOLITAN
3356



must have an education. It is true that a man with a trade, but without an education, has an advantage over the laborer; but the man with both an education and a trade is doubly fortified.

The young man who takes care of his mentality and physique by dividing his evenings between recreation and study, is able to serve his firm in the highest capacity. When the chance offers he knows how to go into business for himself, and there is no reason why he should not be successful even if he has to start without capital. He possesses what other people need and what they will have to pay for. With so many men uneducated in the higher branches of their business, the man who knows has an absolute advantage.

Education is easy to get nowadays. It is cheaper than ever it was. In every trade to-day, with so much development, more knowledge is required in every branch. Manufacturers are turning out machinery and implements of all kinds, that are far more com-

plicated and much superior to those of the past. So it becomes necessary to write more specifications, to have more drawings and put fuller details into writing than formerly. It is this which makes the necessity for higher education.

The first class mechanic who has turned out a good piece of work, should be able to place his production on record, technically and clerically. Indeed, until he can do this he can hardly be called a good mechanic. It is for this reason, I believe, that so many of our successful men have given liberally for educational purposes. They know what is required. Young men with technical ability and educational advantages which have been outlined, are very few even in this progressive country, and the big employers are constantly on the lookout for them. Education will not only bring a man higher in his daily occupation, but it will give him much better standing socially. Therefore, the young mechanic should overlook no opportunity which will

enable him to equip himself for the responsible positions in his business.

Suppose a mechanic, skilled enough at his business but without any particular schooling, should stumble on an idea that was worth patenting. He would be unable to go through the necessary routine to secure the benefits which ought to accrue from his brightness. With an education he would not only know how to go about this, but might develop the original ideas into something that would not only make him wealthy, but bring him fame as well as fortune.

Learn to work and learn to think. Train your mind just as an athlete gets his body into perfect condition.

Chapter XI.

Importance of Education

CHAPTER XI.

IMPORTANCE OF EDUCATION.

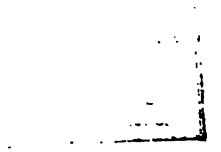
THERE is scarcely a boy but who at one time or another gets a longing for that glamour of the sea which he picks up from reading romances. The modern romance of ships and the ocean is still to be written, and when it is the mechanic will play one of the most heroic parts. There is a great difference between the rollicking seamen of half a century ago and the men who now control both merchant vessels and warships. The difference is that between the laborer and the skilled mechanic. In the old days of sailing vessels, ropes and rigging and some smattering of navigation were all that the best of them were called on to know. Nowadays there is machinery of every sort, from the simplest to the

most intricate, and from the smallest to the heaviest, on board all big vessels. The boy who wants to be a good sailor of to-day finds himself far down the ladder unless he has some mechanical ability.

On a battleship from the highest officer down almost to the apprentice, mechanical skill counts towards promotion. Even the gunners, the men who do the fighting in war time, must have this ability, for they handle some of the most delicate mechanism, have to care for it and know how to repair it, even in the piping times of peace. All sorts of tradesmen are utilized aboard the fighting ships that go to make up the navies of the world. From the heavy working blacksmith and the boiler maker to the finest of electricians, thousands of skilled men are employed, not only by Uncle Sam, but even the smallest power that has a navy. The "Jolly Tar" is no longer a rough fisted fellow, but a workman who understands his trade.

In the merchant marine in which are

ELECTRIC LOCOMOTIVE.



some of the largest steamships in the world the same thing holds good. Even on the big modern sailing ships, although they are propelled by canvas, there is usually a steam winch, perhaps steam steering gear, and an electric light installment. That these may be cared for properly, there have to be mechanics among the officers. On the big passenger ships that often carry a million of money, besides a fortune in cargo and a thousand passengers, it is on the engineer and his staff of mechanics that safety depends. So that it can be seen the mechanic has invaded even the romance of the sea.

These men, just as much as their brothers ashore, require much more skill now than they did in the past. They also require a much better education. To make a comparison, we will look at a simple reciprocating engine. It is of the sort that was generally used twenty or thirty years ago, and was termed a "plain slide valve" engine. Compare that now almost antiquated machine with the reciprocat-

ing engines of to-day, and it is found there is a vast difference in favor of the present apparatus. The mechanic who was able to design and build the old-fashioned affair would be lost to-day when handling the present reciprocating engines, without mentioning turbines or gas engines. If the attention of the mechanic who worked thirty years ago were called to the engine of to-day, with its Corliss valve gear, or the automatic cut-off, improvements which are now a great saving to the users of steam engines, it would puzzle him completely. If one should go a step farther and call the old timer's attention to the compound engine, the triple and quadruple expansion and the condensing, he would find that he had to learn his trade all over again. He would be the quickest to see that the engine builder of to-day must learn and know a great deal more than his brother of the past.

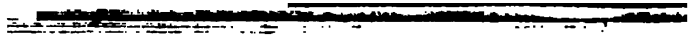
These are only a few of the great many reasons why the mechanic of to-day needs a better mechanical training and a better educa-

tion than the man who used his tools thirty years ago.

The boy ought to understand that once he has learned his trade he is far better equipped to receive the high technical education than the man who has never touched the practical end of a business. A thoroughly trained workman is the only one who can aspire, with ease and less loss of time, to the best position.

Chapter XII.

The Foreman and Superintendent



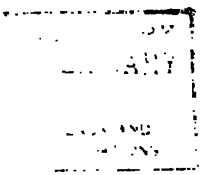
CHAPTER XII.

THE FOREMAN AND SUPERINTENDENT.

IF the young man has kept to that fixed purpose of becoming an expert in his particular line, and if he is of the right kind he will soon find appreciation from his employers. This will come in the form of advancement. If it is found that he is able to take charge there is no employer but will offer him a better position as sub-boss, or foreman, and of course, the successful foreman, sooner or later, reaches a superintendency, or managership, with perhaps something even higher in store for him. Talking from a practical standpoint, the man who makes a good foreman must not only be a finished mechanic but have possession of other marked qualifications, before he can really be said to fit the position.

The man who intends to hold authority over his workers should be a good judge of human nature, and have the ability to handle and deal fairly with men. The power to grasp details must also be his, for, as he advances in position, this sort of work increases. Small annoyances must never cause him to lose his temper, so before accepting any such responsible position, it is the duty of the candidate to consult himself as to his ability and capacity. Responsibility will rest heavily on his shoulders, because the workman who accepts such an office must accept also every iota of the responsibility that goes with it, and that in full. Nothing should ever tempt him to either shirk or shift the blame. To some it is given to be gifted for such positions.

The ideal foreman should be a teacher as well as a master. Should he find one of his workmen not accomplishing just what is expected of him, the boss must never find fault unless he is able to remedy the error. When he is capable to take the workman's material or



tools, and show him a better, quicker and easier method, he is commanding that one man's respect, and will be successful with the others. On the other hand, if he is not expert enough and should discover that those under him are more skillful than he, that foreman is certain to be made a laughing stock.

It often happens, and not only in factories, that men accept positions they cannot fill, or are put in charge by relatives through influence. They accept the position, it might be said, on their nerve. The result is invariably bad, both to the candidate himself and the unfortunates who have to obey him. Soldiers, who in the matter of obedience are little more than machines, often speak of a superior as a "good officer." This is the highest respect that can come from the private to the gentleman with the commission. It means that although he may be a martinet in the matter of exacting obedience and full duty, he really does take care of those under him, listens to their complaints patiently, and sees that they

to accept an advancement for which he is probably unfitted.

Men taking charge as foremen or superintendents should be able to foresee trouble, prevent difficulty and avoid mistakes. They should in themselves have the ability, practice and intelligence to teach their men how to guard against errors that must arise in manufacturing. Anybody can detect a mistake after it has occurred and done its damage. It takes the experienced man to guard against it, to avoid it, or nip it in the bud before it creates havoc. To be a "top notcher" the workman must also be an organizer and understand what organization means.

Chapter XIII.

How Character Counts

CHAPTER XIII.

HOW CHARACTER COUNTS.

WHEN the apprentice first enters the shop from which he hopes to come forth an expert mechanic, he should remember that his measure will be taken both by his bosses and his fellow workmen. A great deal will depend on his behavior. He must try to cultivate a good disposition and firm character. He should learn to be patient, to keep cool, and, according to the old saying, not "fly off the handle" on the spur of the moment. He should never lose his temper, no matter how trying the circumstance may be, but endeavor to keep perfect control of himself. This is very important in order that the boy be successful. No foreman will think much of the man who gets excited at every little thing. Nothing im-

portant can be entrusted to his care, for in a moment of excitement he is liable to do things that he will be very sorry for shortly afterwards. Many men have lost splendid opportunities by letting their tempers run away with them.

It is, therefore, essential that the apprentice should study his own disposition, temper and character, so that he may mold them for the better, not only for the benefit of himself but for the comfort of his associates. The boy will find that the workman who is nervous, excitable and jumps at conclusions never amounts to a great deal. The workman who takes everything into consideration, and thinks before he acts, is the one to be trusted and the one after whom the boy should try to pattern himself. It is not uncommon for a man on the spur of the moment to throw his job to the winds, only to find that he can't secure employment, perhaps, for months. Had he kept cool at the right time for fifteen or twenty minutes, he probably would have found that there was

nothing the matter. It ought to be impressed on every young man that he should never leave one employer until he is satisfied that he has secured another. And it is good practice never to leave one position unless it is to accept a better one.

Some workmen think it is clever to quit suddenly, expecting to injure or spite the firm or boss by whom they are employed, but they are always hoisted on their own petard. The old adage holds good that "he who digs a grave for another usually falls into it himself." Spitework should never be practiced and especially not in the workshop. It never does any good, but usually results in a great deal of harm. There is no shop in which there will not be a difference of opinion, at one time or another, while discussing construction or in social and political questions. This should never be permitted to become the cause of a quarrel, or rouse any feeling of animosity. On the other hand, such differences can easily be made to serve as a benefit on both sides. It

is such discussions that bring out new ideas. When suggestions are advanced, the boy should learn to profit by them instead of quarreling over them. The boy may meet many men who will believe that any divergence of opinion should be settled with the fist. He should school himself to believe that such things mean simply a display of ignorance and degraded character.

Jealousy among workingmen should always be avoided. Some mechanics will growl because their neighbors are doing better work and earning more wages. It is a mistaken way of looking at a superior craftsman. It is far better to study his methods, learn his practices and beat him if possible. The boy should say to himself, "If Smith can do this I can also, and do it better." It is much more satisfactory and more profitable to have this feeling than to go around disgruntled, and showing jealousy. Trying to do the best possible will improve not only the disposition but the wages to be earned.

The boy should always be firm, never attempt to lie, work no injury to his fellow-men and never say anything behind another's back. The boy with firm character will always face the truth. Should he be guilty of an error he will acknowledge it and, by doing so, find that he has gained respect. The boy who will admit his mistake, and say when he is in the wrong, can readily be helped, because he will learn experience through his misfortunes, and so endeavor to avoid them in the future. The most satisfactory man to deal with is the truthful man of good disposition, character and habits. A man with a clear conscience is never afraid to bring his grievance before the proper authority.

Should at any time the apprentice imagine that he is being mistreated or neglected by his firm or employer, he ought to be man enough to go directly to headquarters and tell about it. The chances are all in favor that the explanation of the boss will set him right. If he has a grievance he should not endeavor to console himself by stirring up strife in the shop, creat-

ing additional trouble, but at once have the matter adjusted. He should never plot against anyone he may imagine is against him. If the apprentice can keep even some of this advice in mind he will leave the shop not only an expert mechanic, but a workman with hosts of friends.

One thing absolutely indispensable is that a workman should never get it into his head that he cannot be replaced. There was a newspaper man once who, because he could draw cartoons, write poetry and "cover" any story, thought that his employers would never get along without him. The idea made him take privileges which no other members of the force would dare to. To his amazement one day he found himself discharged. This genius stood across the street and expected to see the newspaper building topple. About five years later he discovered to his chagrin that the paper had almost doubled its circulation since he left it. It is a good thing to remember there is always some one willing and able to fill your position, no matter how important it really is or you may think it to be.

Chapter XIV.

Future Possibilities

CHAPTER XIV.

FUTURE POSSIBILITIES.

ONE of the most serious objections often raised when the question of whether a boy should or should not learn a trade, is that there cannot be much more opportunity for a man, because they have almost all been taken advantge of. This objection comes almost invariably from inexperience. In looking at this busy world and noticing all that is going on in every field of endeavor, the great improvements and widely developed enterprises, no thinking person can believe that opportunity has passed. The age of opportunity is just beginning.

The young man who wishes to become a mechanic should not feel discouraged because he has to learn a trade before he can really

start out in life. The clear headed, ambitious youth need never be afraid at the yelping of the calamity howlers. He should firmly make up his mind that there is more than enough to do, and that far greater progress will be made in all directions during the future. There never was a time in past history when the man who wanted could not find the chance to advance himself if he bravely set his mind to it. If that has been true in the past, the future can hold nothing but a golden dawn, and that will be the dawn of the real mechanical age.

Any authority will affirm the fact that there is no branch of trade in the world to-day that is absolutely perfect. Where there is lack of perfection, opportunity gets its chance. It has been said there is nothing new under the sun, and to paraphrase this it might be added that there are very few things not subject to improvement. There is not a manufacturer to-day who cannot see how his goods can be bettered, if he could only land on the right method to accomplish that end. The variety

of industries, and other branches of business, with the profusion of articles manufactured and produced, are probably a hundred fold what they were a hundred years ago. Taking the ratio of progression, any one can see what the result ought to be a century from now. Progress always goes forward; one invention creates a demand for another, and each improvement makes opportunities and the necessity for at least one more.

The market for all manufactured articles is greater than it was a very few years ago. From that it is easy to argue that the demand also must have extended. This counts not only in quantity but in quality. Compare an old-time railroad schedule with the very latest issues. When trains were first run twenty miles an hour was thought a phenomenal speed. During the years this has gradually been rising to thirty, forty or fifty miles an hour. To-day we are traveling from New York to Chicago in eighteen hours, but even this is not fast enough. In this age of steam and elec-

tricity, the possibility is very close at hand that the man from Manhattan may get to the Windy City in twelve hours. It is more than likely that electricity will do it. All it requires is the proper application. Yet the grumblers try to tell us that all opportunity has passed.

This very argument may be applied to our ocean steamers. Time was, within the memory of thousands still living, when those who wished to cross the Atlantic consumed weeks on the voyage. They suffered all kinds of hardships and had to put up with no slight degree of discomfort. Now the Atlantic trip is little more than crossing a ferry and almost as safe. At the same time the passenger is surrounded with every luxury he might command in the finest hotel in the world. The Atlantic trip is made in five days. Ship builders and engineers, however, continue to plan for liners that shall be even faster and more comfortable. Again there is an opportunity.

Even in this remarkable period when so much seems to be done by machinery there is

still far too great an amount of work to be accomplished by hand. No one can point to a machine of any description, built ten years ago, that is not utterly out of fashion to-day. This applies to modern buildings as well. The young would-be mechanic can again see for himself that he has ample chance to catch the opportunity.

It has been a long procession through the ages to the apex of achievement at which we now find ourselves. The upward climb is still long, but can be accomplished by those who are willing to contribute skill and brains. If the mechanic will only try to be as perfect as he possibly can, will seek for opportunities, learn where, when and how to make improvements, he can push steadily higher up.

Take notice of the men who are in the forefront of every great trade and business, and you will find that they never argue "there is no room for improvement." They are the very busiest in the van of development. If the young mechanic can think quickly enough,

and work skillfully enough, to develop or improve something already in the market, there are thousands of able men seeking his aid. They will see that the clever mechanic will get as close to the top of the ladder as he has the native ability to reach. The men in the forefront receive the big wages, and this is what every young man should strive towards. Capacity for work means capacity for pay.

If any one imagines there is nothing left to do let him look at the gigantic industries which are adding and adding to their plants every year. New companies are being organized all the time, and the most mammoth undertakings are planned.

Every boy knows what is being done on the Isthmus of Panama. The mechanic has a chance there. For years to come there will be thousands of opportunities for the man with brains, not only to advance himself, but even to receive the very highest wages, and actually make name and fame for himself. Yet some people say there are no opportunities. Niagara

Falls has been harnessed for power, and other monster undertakings of the same sort are now under way. For such work skillful mechanics must be employed. Only recently the great Navy of Russia was almost completely obliterated. The skillful mechanic who turns his hand to ship building might find his chance in the empire of the Great White Czar.

The enormous amount of manufactures and machinery of all sorts shipped annually from this country is almost beyond belief. Still there is a cry for more. With all these facts, which only skim the surface of the subject, it is hardly necessary to tell the young man or the beginner that he ought to feel encouraged because he is not too late. His opportunities are far brighter than ever were those of our forefathers, and the future is of the rosiest. Therefore, no boy should hesitate for an answer to the question as to whether or not he ought to learn a trade.

The calamity howler in labor circles claims that machinery is taking away opportunity

from the workman. One has only to see that if some inventor could perfect machinery that would enable him to produce a good automobile for a hundred dollars, this would increase the demand for them to such an extent that twenty-five such machines would be built where only one is now produced. In other words, it would put the automobile within the reach of everybody, and everybody would have one. It is an absolute certainty that where the cost of production is reduced the demand will be increased. This is what machinery is doing to-day.

Chapter XV.

Social Duties

U. S BATTLESHIP ILLINOIS.

CHAPTER XV.

SOCIAL DUTIES.

EVERY good citizen should take a lively interest in social affairs and the workman is a good citizen. Of course, he should remember that he is not one of the four hundred, and so should not attempt to copy their methods; but he can have his own social life. Friends should try to spend an evening with each other as often as possible, take an interest in the little family gatherings, and attend meetings whether they are fraternal, charitable, or of a political nature. It is the very best of schooling for the young man to listen to all the addresses, arguments and debates that he can. By this he learns that one man's ideas will not always predominate. The world has to submit to the majority and the young man has to learn that the majority rules.

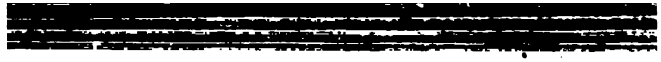
Not so very many years ago almost every village and every town had its debating society, where the vital questions of the hour were looked at for and against. These associations produced some great men in various lines, because the arguments that were threshed out made keener wits and sharper minds. Many an astute lawyer who has, at this day, reaped the reward of energy and brains can look back to the old debating society in his home town and see where the foundation was laid for the fame that is now his. The man who has to talk must have his ideas arranged in his mind, or his speech will be incoherent and lame. Like everything else, the ability to make a speech can be cultivated. Talking before a gathering of friends and acquaintances not only tends toward quickness of thought, and nimbleness of tongue, but gives a self possession that may stand a man in good stead in the years to come. It is a pity that the old-time debating societies seem to have gone to the wall.

Of course, there is the social life of the saloon, but this is not to be advocated. The arguments heard there are more likely to be inspired by something other than wisdom. There are too many of the working class and many mechanics who take no interest whatever in the social affairs of their own class. They do not wish to attend even a meeting, because they would not feel at home. The reason for this is simply that they never tried. A little practice will accomplish almost anything. To be without some social tie is not the way to live. There are many men who cannot make a speech or any sort of address, but there is nothing to hinder any one from having the ability to at least excuse himself in a polite and neat fashion. For a citizen, in a free and independent country, not to be able to attend a meeting is not a healthy condition of affairs, and every mechanic should remember that he is as much entitled to a front seat as any one in the assembly. The mechanic should be proud to occupy a prominent place, because

it is his business to be his own representative. He should not only attend public gatherings, but never hesitate even to take office or to preside. This is especially true in politics, which is most important in a country like this, where we all have a voice in the government. It is vital that the workman take a hand in politics, and an intelligent hand. He can only do this by mingling, as has been suggested, in every assemblage he has the right to attend.

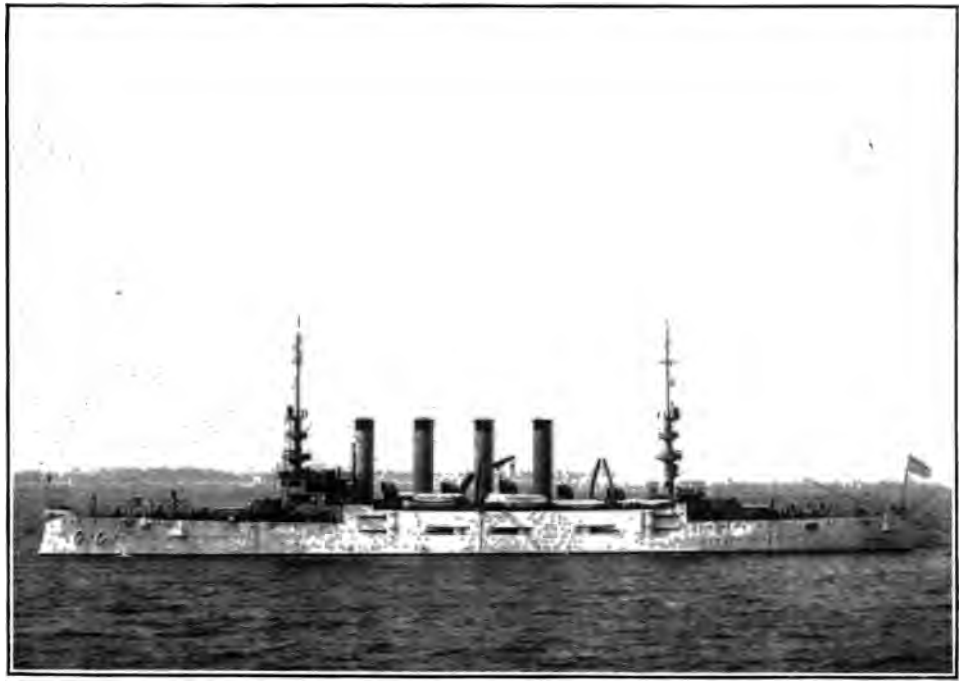
It is his duty to see that honest and good citizens are candidates for all positions and not to leave these matters to professional politicians. There are too many workmen who neglect politics entirely. Some even do not vote, and when election day comes there are those who have not the knowledge to cast a proper ballot. This argues that the man cannot be intelligent, and without broad intelligence there must be very little skill. Every workman, whether born in this country or abroad, should read and understand the Constitution of the United States and of the vari-

ous states, for there is no greater government on earth for the good of mankind. The young man should at least read one paper which differs in politics from the opinion he himself holds. In this way he can see both sides of the question. The few hours that are required for such social duties or political ones, and for reading, every man, no matter how busy he may be, can well afford to spend. They will be to his advantage.



Chapter XVI.

The Workman as a Citizen



U. S. ARMORED CRUISER WEST VIRGINIA.

THE NEW YORK
PUBLIC LIBRARY

CHAPTER XVI.

THE WORKMAN AS A CITIZEN.

THE young mechanic should remember that he cannot be a first-class workman unless he is a first-class man physically. For this it is necessary that he should live well. Learned men have said that it takes a lifetime to learn how to live rightly. Many who have great earnings, nice homes and fine positions are physical wrecks at the age of thirty-five when the prime of life ought to be just beginning. This is what the young man ought to strive to avoid. Whoever has broken health cannot be happy.

A few simple rules, if carefully followed, will aid one greatly in the preservation of physique. The young workman should eat three good meals a day, keep regular hours,

have plenty of sleep, no over-indulgence or expenditure, and see that he has some amusement. Any man who will adhere to this, if he is without hereditary disease, need never worry about his well-being. He should get all the fresh air and exercise possible. This is simply doing justice to himself. Cheerful surroundings at home will aid considerably. He should carefully pick his associates. He should save his money and never spend any unnecessarily. Keeping the eyes and ears open, and the mouth and pocketbook shut, is a test that if carefully remembered will insure a competence.

One of the aims of every young working man should be to get a bank account, if only a very small one, as early as possible, and not only see that it is increased, if only a fraction at a time, but foster its growth. Many a man has lost an opportunity through not having the few necessary dollars to aid him when he fell on a good idea. The man with a little capital always has the advantage, and commands re-

spect. He is independent in a measure, and the world very soon finds this out. Some kind of insurance ought also to be carried. One dollar a week will go a long ways to carry a very respectable sum. It is well to start both a bank and the insurance payments before marriage, for then comes a period when money is always required and it invariably takes a few years before the home nest is cosily feathered. If the start is made early it will be all the easier as the years pass by.

Every young man who has learned his trade should get married, because there is no better companion or more careful adviser than a good wife. His interests are hers, and she will be watching when he might have his eyes averted from an opportunity that was passing in front of him. She will not only save him money, but, by making his home the place where he will spend his evenings, keep him from bad company which tempts more young workmen to ruin than anything else. Never spend money foolishly nor buy

anything you do not really need. In the same way it is one of the most foolish things to need something you cannot buy. Borrowing is only honorable when the money sought is for an investment that will guarantee its return. Borrowing money to spend is almost a crime.

No good work can be done unless the mind behind the hands that accomplish the task is contented. Any one who will save a dollar out of his earnings each week, establish himself substantially, get a home of his own and pay for it, can have contentment. It all rests with the man himself. First he should be able to earn enough to live, and then manage his affairs so as not only to take care of that money, but of his health and happiness and also of his family. This is no theory, because it is practised every day by many workmen. There are thousands throughout the country who are comfortable, have means, are contented, and respected as among the best citizens. All that is required

is the right start at the earliest possible opportunity.

As for our country, it is no more or less than what the citizens make it. When they are prosperous, this country must be likewise. When manufacturing and business are flowering to the best advantage there is no reason why the entire land, and the whole people should not be equally so. While this is a comparatively new country, it has had a good start, so that now it is far ahead of many of those old lands whose histories creep back into the fogs of time. The world is our competitor; nothing but skill and enterprise will keep us in the lead, and whilst we are there prosperity and independence will continue. These will add to the growth of our great industries, and to the number of our many happy homes.

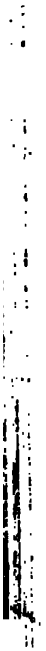
It is important to every young man that he learn to love his country and to have its welfare at heart. His interest is the country's. It is a mistake for the workman to howl against capital, because it is always necessary and

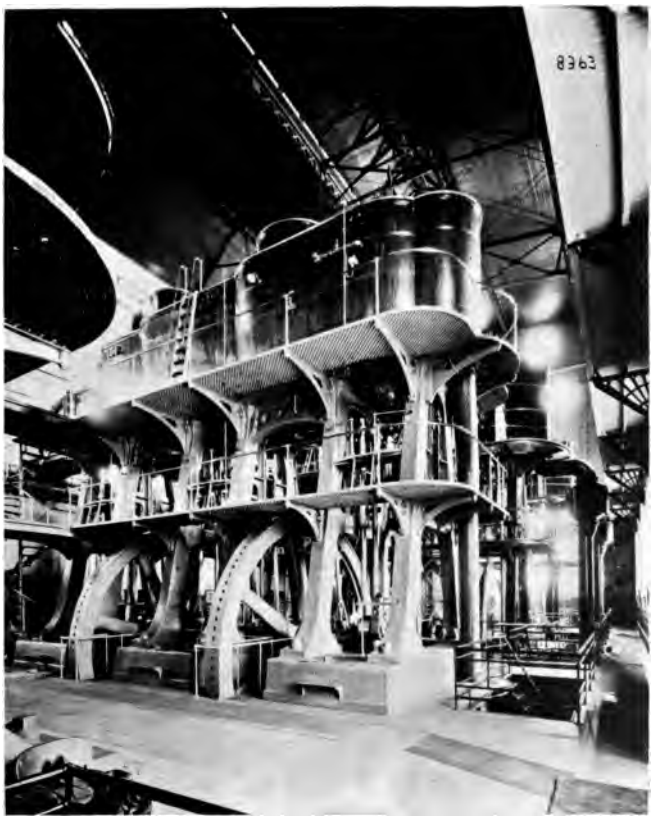
the work it does is entitled to its interest. Capital should never be discouraged from investing in business. At the same time, the man who does the really hard work, who uses his muscles and the skill of his fingers, the energy of his body and the keenness of his brain, who keeps at it from morning till evening, is justly entitled to a fair compensation, such as will enable him to live comfortably, to raise his family as he would wish, to educate his children and to have a dollar or two left for a "rainy day."

The motto should be "Live and let live." I sincerely hope that labor and capital will soon learn to understand each other better, for their interests are identical. They need each other and our country needs both.

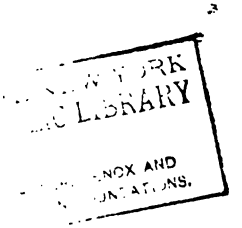
Chapter XVII.

Reward for Skill and Energy.





BADEN PUMPING STATION. ST. LOUIS WATER WORKS.


LIBRARY
NOX AND

CHAPTER XVII.

REWARD FOR SKILL AND ENERGY.

"KEEP busy to keep happy." This little motto is a very good thing to keep in mind, because "Satan finds mischief still for idle hands to do." I think it is Kipling who says in one of his Orietnal poems that:—

"He who does not work
Must surely die."

If the reward of working is that a man may live, then the more energetic and skillful that man can be the higher the reward he may gain. The prizes for being both energetic and skillful are many and rich. Whenever you see a successful man, you may rest assured that he is not one of the lazy kind, nor is he classed among the lowest in his particular line of busi-

plums will finally come to his hand. Almost invariably the employer and the foreman are men of judgment, with keen eyes for good work, hard work and ambition, so that the subordinate can keep in mind that, in due time, he will be noticed and promoted.

The man who is in business for himself steers his own course and, whatever befalls him, rests on his own judgment and clear sightedness. When employed for others or under others there are frequently reasons why the boss or foreman may overlook a man's ability for a little while. But on the other hand, there are often cases in which people overestimate their value, and when working for others, it is not justifiable to put a value on ourselves. This requires to be taken into consideration also. He is a very poor man who is not after the best. Why should a man who is hiring labor not prefer the superior? It is possible that skill may supersede the necessity for it. It is then the duty of the workman to seek out a more important

place where his expertness will be required. This is simply doing himself justice. Such a thing frequently occurs in factories, as well as in the professions.

A country doctor subject to calls at all times of the day and night, trotting about the country side, handling all sorts of cases, and perhaps not always collecting his fees, would be very foolish when he discovered that he was an exceptional surgeon, if he did not move to some great city and push himself forward. The school teacher in the little old red school house, who found that he had the capacity for handling big concerns, would be false to himself if he did not aim to become a college president. It is on this basis that a man should look out for himself if he has the capacity.

Take two men with the same education, of the same age and the same general intelligence, and put them at the same trade earning the same wage. Separate them for a period of fifteen years. The chances are that one will be found to have moved along the same groove

in which they both started, earning about the same amount of pay all through the fifteen years. The other will have worked his way up and perhaps doubled or trebled his wages. In such a case it will be certain that he who has advanced himself will, at the end of the period, be by far the more intelligent of the two, because he has not only advanced his income, which has enabled him to live better, to have better associates, but he has educated himself, developed his mental faculties, and broadened in every way. He is the better citizen of the two.

Services are always paid for according to their grade, and if the man can "produce the goods" he will command the reward. Besides, there is a satisfaction to himself in the skill he can develop. It is far better and more pleasant to have fellow-workmen and associates come to you for advice, than for you to go to them. It gives you standing.

Chapter XVIII.

The Summing Up

READY FOR HUMAN HANDS.

CHAPTER XVIII.

THE SUMMING UP.

IN summing up the many reasons why a young man should learn a trade one need only refer to the statement by Secretary of War Taft in the address he made at St. Louis. He told how, in the work done by the Panama Canal Commission, it was the easiest thing to secure unskilled labor. To get mechanics, however, was an entirely different proposition. The natives of those islands scattered about the Caribbean Sea could be utilized as laborers, and the suggestion was even made that a horde of Asiatics be brought into the canal zone. In the matter of skilled labor, the commission found that it had a conundrum before all the expert work could be accomplished.

Let the young man remember that the

person skilled with his fingers and nimble of mind can always secure employment where mere brawn and muscle will achieve nothing. The Panama Canal has been taken as an illustration because it is probably the most mammoth undertaking of these years. Even while this book may run through several editions there will be mechanics required for work in the Canal Zone. When a man has a trade at his finger tips he need not adhere strictly to one particular line of business. For instance, the blacksmith can work at wagon making; he may be in a machine shop, engaged in horseshoeing, be a tool dresser, or have employment in a car or locomotive shop. The machinist of to-day has the largest field of any mechanic when looking for employment.

His trade has so many tentacles that almost every branch of manufacturing will, in some way, require him. This does not necessarily mean that he has to work on making machinery. There are so many factories of so many different kinds, from the heavy rolling

mills to the delicate spinners and each is equipped with machine shops, so that the able mechanic can almost invariably find employment. Between these two extremes there are those establishments which build engines, pumps, electrical machinery and all kinds of tools for iron and woodwork, locomotives, railroad cars, etc.

There is a splendid field for mechanics in the manufacture of steel that is coming into prominence lately. Hundreds of articles are being manufactured from structural steel, sheet steel and pressed steel. These materials are taking the place of steel castings, malleable castings and gray iron castings, lumber and stone.

Steel has made it possible for us to erect exceptionally high buildings, what are called "sky-scrapers," used for office buildings, warehouses, etc. Steel is also prominent in the buildings used for manufacturing, and in bridge construction, steel is the principal material used. The same applies to ship build-

ing and car building, steel being used quite extensively.

Steel is also being universally used in the building of all kinds of machinery, agricultural implements, and is also being used in the manufacture of automobiles. It is now opening a new field in the shape of steel furniture. It is also coming into prominence in the manufacture of a variety of small articles, especially where weight is objectionable and strength is important, pressed steel being superior to any other material.

A young man entering that field is not making a mistake on account of the extensive use and the possible great development in that field in the near future.

One of the very latest developments of the iron trade is that of the pressed steel equipment. Of course, the best known product in this direction is the freight car—the open gondola. Now this material is being used for box cars and for river barges.

One of the anomalies in this country to-

day is that so many foreign workmen, who come over as emigrants, secure work over the heads of native born Americans. This, I think, is one of the most important reasons why every American boy, who has not financial advantages, should learn a trade. Discussing this question, it is often discovered there is a general belief that the man who earns his livelihood by a trade must do hard work. As a matter of fact, machinery has been so perfected within the last decade, that the man who controls the great engines of commerce scarcely has to sweat. He no longer uses the hammer, the axe and the saw in the manner of our forefathers. The rude tools of our ancestors he does not have to handle. In hewing out great logs or hammering iron into size and shape, he must put on his thinking cap and do mental work where his forefather had to utilize his brawn.

Working in this fashion, the modern mechanic does not have to "labor." Of course, it is hard work, but he does more thinking than

working, using the term "working" in the sense of the laborer. This makes it much more pleasant to be a mechanic. While he has done away with the physical strain the mental has increased, and this requires a keener edge to his education. It is a matter of nimbleness in the finger tips and power in the brain matter.

Creative work is supposed to be the highest in the world. The genius is always said to be the man who creates a book, a picture or some other form of art. The mechanic is in his own way a genius. He can be given a pattern which he is supposed to follow, but if he can improve on that he is doing the same creative work that the novelist, the artist and the playwright has achieved. There is a certain pleasure in accomplishing such a feat. It may be only in the building of a stairway, in the piecing together of a machine, or the coiling of an electric wire, but when the labor is finished, no matter to which branch it is allied, he can look back at the product and be cer-

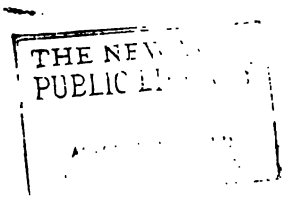
tain that the work of his hand has been good. This helps to make labor easy. It gives energy, because the workman who is engaged on something in which he takes pleasure is certain to be in love with his task. The sweat of his brow is then no longer the penalty which it was once supposed to be.

The fact that a young man has spent several years of his life learning a trade does not mean that he has to stick to it. The mental discipline which his apprenticeship will develop is as good as a college course. In fact, that is what most of the colleges advertise as their real asset. In England, to be an Oxford or Cambridge man, means that the individual has the tone which can only be acquired at these seats of learning. To be from Oxford or Cambridge does not necessarily mean that a man is educated in a technical sense beyond his fellows. The real distinction is the mental discipline, and this can be acquired just as easily in the factory as in the college. The space between is very slight indeed.

No country in the world affords greater opportunity to the young man than this. The fact that he has learned a trade need not debar him from aspiring to the very highest position socially, financially or politically. It is rather an advantage, in fact, for a citizen of the United States to be known as a tradesman. This is a country where people work not only with their minds, but their hands, and the word "craftsman" means that the person designated can use his fingers. The man who can handle his tools can help himself in many instances where another man without that ability is handicapped.

The apprentice not only learns the value of the various tools he is called upon to use, but he gets an insight into the study of material. If he has the mental ability or is willing to cultivate this, the study of material may result in his reaching any position for which he has ambition. It would be a great advantage for the average commercial man to

MODERN BATH ROOM. STANDARD SANITARY MANUFACTURING COMPANY.


THE NEW
PUBLIC L

have an idea as to the relative value of an article on account of the material used in its makeup. If he could tell at a glance the time required and the ability expended in the working of this material he would be of still greater use. The American salesman is supposed to be unique because of his glibness of tongue and his push. If back of these two qualities he also has the training of a mechanic there would be no proposition that could overwhelm him.

The young man who learns a trade will find in later years, when he has risen to a more dignified position, that this will stand him in good stead. He will understand what work means. If he has employees they will not be able to waste his time because he can tell whether or not he is being tricked.

With a career behind me which, starting as apprentice, has carried me to a responsible position, I would impress on the American boy the value of mathematics. To any one who

has this ambition to learn a trade the science of figures is invaluable. Next in importance I consider draughtsmanship. For the good of himself, of his friends and of this country some reasons have been outlined "Why a Boy Should Learn a Trade," and in closing the summing up I would suggest that whatever business you start to learn, be sure to learn it right; especially if it is your intention to follow it for a livelihood. Do not learn it by halves. Be a master by all means.

Nothing succeeds in this world like success; and to be successful we must have ability. To get ability it is important to have the right man in the right place. We are no more and no less than what we make ourselves. It is up to us to choose and to succeed. We can become important if we try. We can be the ship of state or we can remain drift wood. Which shall it be?

Get busy. Get experience. Get ability. Get earning capacity. The sooner the better. Do not waste your young days with too much

play and loafing; and when you take a job, do not look for the easy one that requires neither energy, practice or study. A job that anyone can do will not pay well. Learn to be able to fill important places. Learn to be worthy of important places. Some men never hold important places because they are not worthy. Others because they do not have the ability. Try to get both.

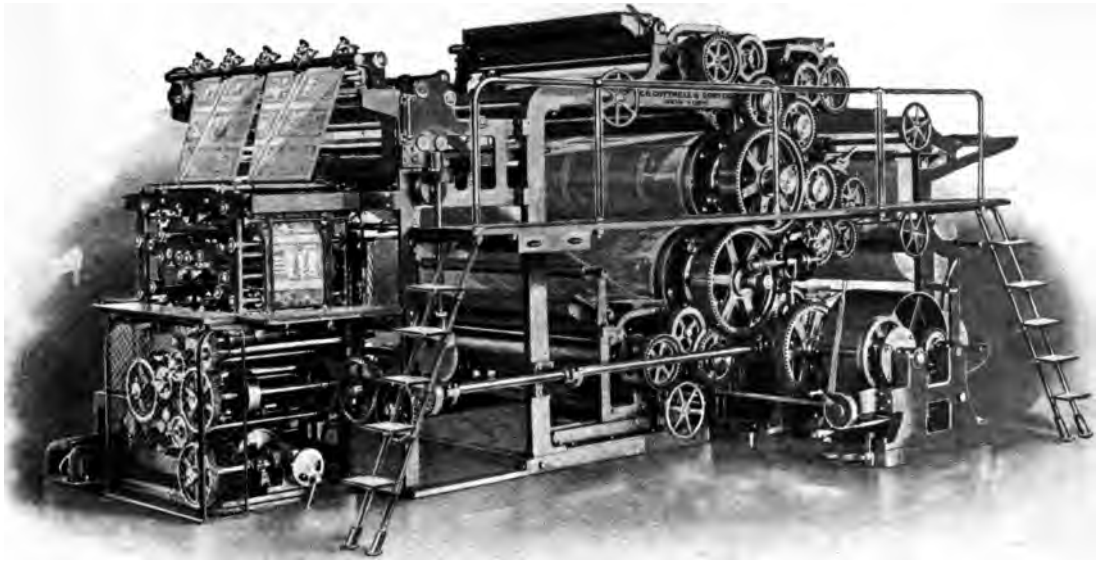
Do not hesitate to wear overalls; they are no disgrace. You have as much right to be proud of your overalls as of your ingenuity. Do not be afraid to soil your hands. The man with the cleanest hands does not always have the cleanest conscience. Cleanliness is very essential and soap is cheap. It pays to be neat and tidy. A $15.00 suit of clothes, kept cleaned and ironed, looks better than a fifty dollar suit neglected. The man dressed up to kill may not be any more contented than you are, and you do not need to be a millionaire to be happy. You cannot always gauge a man's character by the size of his bank account. Enough

means can be had by everyone who has ability and energy to be comfortable and contented. Remember that the first dollar you save will bring you the most interest. Remember, too, that money spent in saloons brings no interest.

Do not let reverses check your career. Do not get discouraged if you do not succeed the first time, but try again. And be sure you never make the same mistake twice. Financial reverses should never stop a man's progress. He should profit by the experience. It is the man who can overcome reverses, who can face difficulties, who is sure to win. I am frank to say that all successful men have met with reverses, more or less, and were it not for their determination and persistency they would never have succeeded. Reverses do not make you less able; but ability backed by courage, energy and honesty is sure to win.

And if you are the "boy who has learned a trade," depend upon it you will win.

THE END



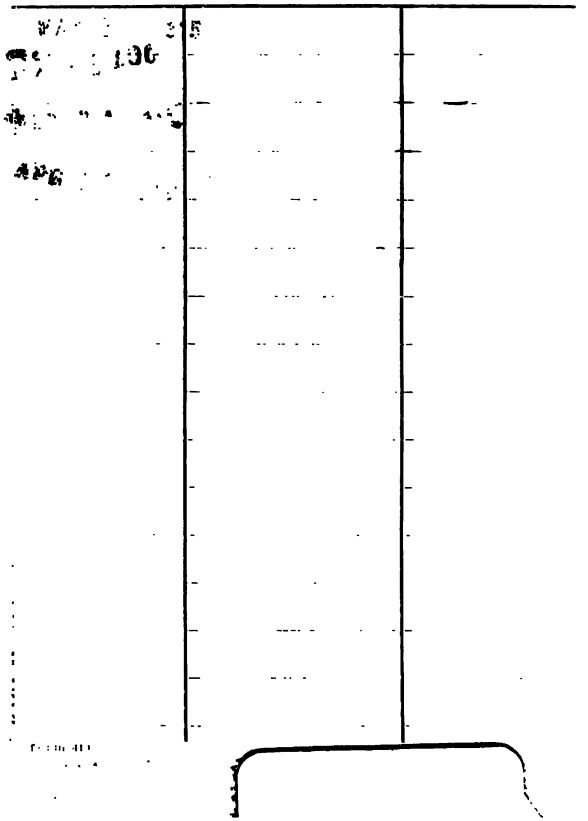
C. B. COTTRELL SONS CO. LATEST ROTARY PRINTING PRESS.

THE NEW YORK
PUBLIC LIBRARY

ASTOR, LENOX AND
TILDEN FOUNDATIONS.

THE NEW YORK
PUBLIC LIBRARY

ASTOR, LENOX AND
TILDEN FOUNDATIONS.

THE NEW YORK PUBLIC LIBRARY
REFERENCE DEPARTMENT

This book is under no circumstances to be taken from the Building